Queen's University Pre-Budget Submission

to the House of Commons Standing Committee on Finance

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August 2019

Summary of Recommendations:

1. Commit to targeted investments in research, commercialization and economic development in support of the Eastern Ontario Cleantech and Chemical Processing (CCP) sectors.
2. Invest in the training, retention, and knowledge mobilization of the next generation of highly qualified personnel.
3. Invest in emissions-reducing retrofit projects at Canada's postsecondary institutions.
4. Develop sector-specific production standards for postsecondary sector participants in the Output-Based Pricing System (OBPS).
5. Leverage the unique capacity of Canada's research universities to bring together diverse stakeholders to develop low-carbon economy solutions.

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Introduction

For more than 175 years, Queen's University has brought together both a transformative learning experience and research-intensive environment. Queen's attracts leading students from across Canada (~15% of this year's incoming class) and around the globe (12.8% of incoming class). The result is a leading university that fosters discovery and innovation, while offering unparalleled learning and skill development opportunities for undergraduate and graduate students. Further, Queen's is proud of its undergraduate retention and graduation, and graduate completion rates, which are amongst the highest in the nation. Through this commitment to excellence, Queen's has established itself as a leading Canadian university – one which prepares its graduates to take on leading roles in addressing the most pressing challenges of our day.

Climate change is one such challenge, which will soon require us to confront unprecedented issues and existential threats. Core questions that shape our society – how and where we work, how we produce and transport goods, and how we meet energy demand – will come under increased scrutiny. Addressing the threats posed by climate change will require a collective, multi-faceted approach, and Canada's universities are ready to answer the call.

That is why Queen's is pleased to participate in the 2020 federal pre-budget consultation process, and to share our priorities for Budget 2020. The recommendations offered herein speak to Queen's capacity to assist the Government of Canada in developing both the research knowledge and the human capital necessary to develop and implement "Made in Canada" solutions to the threat of climate change. Further, Queen's recommendations address climate change through a variety of approaches – including the training of highly skilled personnel, research, commercialization, and knowledge mobilization. Climate change is the challenge of our generation, and one that will take a global response to address. Queen's is proud to do its part, and to offer its recommendations for Budget 2020.

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Research and Commercialization

In Budget 2020, Queen's University recommends that the Government of Canada:

- *Commit to targeted investments in research, commercialization and economic development in support of the Eastern Ontario Cleantech and Chemical Processing (CCP) sector - including:*
  - *Investment in commercialization support – assisting researchers in the cleantech and renewable energy sectors in bringing their discoveries to market*
  - *Supporting early-stage and scale-up firms in clean technology and chemical processing grow and scale – establishing Canada as a world leader.*

Queen's is proud to be at the leading edge in conducting infrastructure research to mitigate damage from climate change. Be it through the work of the Coastal Engineering Lab and its research into preventing and climate-related costal erosion, or the Rolling Load Simulator – which is providing new insights on the construction of sustainable and secure transportation infrastructure – Queen's researchers are at the forefront in mitigating the impact of climate change on our day-to-day lives. Queen's also plays a leading role in the growth and development of the Eastern Ontario economy – both as a key source of graduate talent, as well as in the commercialization of the research and intellectual property. IP from Queen's research – by students and researchers alike – has led to the creation of new firms – particularly in the region's cleantech and Chemical Processing (CCP) sectors – as well as numerous well-paying career positions for highly qualified and credentialed employees. In recent years, governmental and private sector investments in regional CCP firms has served to establish Kingston and the region as a new, high-potential destination for foreign partnerships and direct investments.

The unique mix of research talent, a highly educated workforce, and an emerging reputation for excellence in this field gives Kingston and Eastern Ontario a distinct advantage in positioning itself as a hub for cleantech. Firms in this space are actively working towards new technologies and innovations aimed at reducing emissions and environmental impact. Through targeted investments at each step of the technology development process – from fundamental research through to scale-up support for CCP firms – the Government will be supporting the creation of innovative new technologies aimed at reducing climate change, while supporting a transition to a green economy.

Queen's would encourage the Government of Canada to invest at all stages in support of the Eastern Ontario CCP sector. Budget 2020 – and its call for climate action – represents the ideal opportunity to establish Canada as a leader in clean technology and emissions reduction technologies.

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Talent Development and Mobilization

In Budget 2020, Queen's University recommends that the Government of Canada:

- *Invest in the training, retention, and knowledge mobilization of the next generation of highly qualified personnel:*
  - *Invest in graduate research scholarships in STEM fields, with a dedicated envelope of funding for scholarships aimed at increasing representation of Indigenous students and students from other historically under-represented groups.*
  - *Support efforts to boost in- and out-bound student mobility – allowing more students to gain diverse perspectives through international study.*
  - *Invest strategically through Mitacs in post-graduate fellowships with industry partners in low-carbon or transitioning sectors.*

Addressing the transition to a low-carbon economy will require more highly educated and specialized personnel. Competing in this knowledge-driven economy will require Canada to be a leader in talent, adaptability, and innovation. As Canadian employers and industries look to adapt to the threats posed by climate change, the pool of talent from which they draw will also need to adapt. The jobs of the future will demand a different type of employee – one who brings with them new, more highly refined skills and competencies, as well as the ability to take a global perspective to local problems. This period of transition also provides an opportunity to address long-standing inequalities, and ensure that all Canadians have the opportunity to participate in the future low-carbon economy.

While Queen's is proud to note that 67 per cent of its graduates move on to further studies, Canada lags behind the OECD average in terms of percentage of the population with a graduate degree. Further, Indigenous students continue to lack opportunity for postsecondary and graduate training – contributing to inequality, high unemployment, and economic marginalization. When students pursue undergraduate research opportunities and professional graduate studies, they gain both the field-specific and transferrable skills – such as critical thinking and problem solving – needed for success in industry, the workplace and academia.

Targeted investments in graduate scholarships, student mobility, and post-graduate career training will support the research and educational opportunities needed to enact changes needed to make the transition to a low-carbon economy. Through investments of this nature, the Government of Canada will ensure that Canadian employers have access to the pool of highly-skilled, diverse, and globally-conscious human capital necessary to adapt to the threats posed by climate change.

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University and Research Institutes Carbon Retrofit Fund

In Budget 2020, Queen's University recommends that the Government of Canada:
- *Invest in emissions-reducing retrofit projects at Canada's postsecondary institutions.*
- *Work with colleges and universities in provinces subject to the federal Carbon Pricing Backstop to develop production standards for institutions eligible to enroll as voluntary participants in the Output-Based Pricing System (OBPS).*

Canada's universities represent an extensive network of laboratory spaces, classrooms, residences and offices. While some of these spaces are new, highly efficient buildings – such as those supported by the Government of Canada's *Postsecondary Institutions Strategic Investment Fund* – the majority of institutional infrastructure consists of older buildings, which lack modern energy efficient fixtures. As well, universities face tight restrictions on revenue generation – which limits their ability to recover compliance costs or support emissions-reducing retrofit projects.

As Queen's produces electricity through cogeneration (joint steam and electrical production), the university was permitted to enroll as voluntary participants in the OBPS carbon pricing system. However, this addresses only a small share of Queen's activities and emissions. By developing production standards that align with the needs and activities of the postsecondary sector, the government can assist universities in OBPS jurisdictions in further reducing their carbon emissions without subjecting them to undue cost pressures.

While institutions are eligible for some funding for retrofits under the federal carbon backstop program, the sector is capable of doing much more. The Canadian Association of University Business Officers estimates that Canada's universities have nearly $5 billion in shovel-ready infrastructure and retrofit projects. Queen's has also identified a number of potential projects to reduce its carbon emissions footprint, which could be implemented in the near-term if funding were made available. These projects would further support the targets established in Queen's Climate Action plan, which include a 35 per cent reduction in CO_2 emissions by 2020, as well as achieving carbon neutrality by 2040.

The *Final Report of the Expert Panel on Sustainable Finance* recognized the need for investment in retrofitting the large volume of building spaces owned by municipalities, universities, hospitals and schools in longer-term targets around emissions reductions. By acting on these recommendations, the Government of Canada will bring about three major benefits – assisting universities in reducing their carbon emissions; allowing institutions to save money on energy costs; and incentivizing Canadian industry to invest in developing new tools and technologies to further reduce emissions.

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Convenor Role for Institutions

In Budget 2020, Queen's University recommends that the Government of Canada:

- *Utilize and leverage the unique capacity of Canada's research universities to bring together diverse stakeholders to develop low-carbon economy solutions.*

Universities recognize that they will play a central role in the transition to the low-carbon economy – both in conducting the research needed to develop new technologies, as well as preparing the next generation of highly skilled personnel. Queen's is home to renowned researchers – such as Arctic climate change expert John Smol – and has the resources, networks and capacity to bring together leading experts from industry, government and Indigenous communities to examine some of the most pressing challenges for Canadians.

In recent years, Queen's has collaborated with the Government of Canada to convene experts and stakeholders and advise the government on public policy issues such as Canada's energy landscape and cybersecurity. Queen's faculty have also provided policy advice to the government on a range of topics, including the gender-based analysis at the core of recent budgets.

Queen's recommends that the Government of Canada further leverage Queen's expertise and its role as a convenor of experts and stakeholders to inform its evidence-based policy-making processes. Leveraging the capacity of universities to convene key stakeholders and examine the challenges and perspectives around transitioning to a low-carbon economy offers a low-cost, high-impact opportunity to address the looming threats of climate change.

Conclusion

Climate change poses an unparalleled threat to our society, and the time for action is now. However, this threat also poses a tremendous opportunity for Canada to establish itself as a global leader in the development of a low-carbon economy. As producers of innovative intellectual property and highly skilled and qualified personnel, Canada's leading research universities, such as Queen's, are well-positioned to meet this challenge.

Queen's University thanks the House of Commons Standing Committee on Finance for the opportunity to participate in this pre-budget consultation process. We strongly believe that the investments proposed above will serve as the foundation for the transition to a low-carbon economy. If acted upon, these recommendations will support the training of the next generation of clean tech leaders, and the development of innovative clean technologies. Perhaps most importantly, they will also strengthen Canada's economic competitiveness by ensuring all Canadians have the opportunity to develop the skills, competencies and knowledge to succeed in the economy of the future.